Space Weather Forecast

Issued on Saturday, 07 September 2024 at 01:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate flares are likely. Chance of G1/Minor Geomagnetic Storm conditions later Day 1 and on Day 2 (07 and 08 Sep). Slightly increasing chance of S1/Minor Radiation Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low, with a peak Common-class flare observed at 06/1919 UTC from a region in the southwest. There are currently eleven sunspot regions on the visible disc. A large region has departed the disc during the past 24 hours, passing beyond the southwest limb. A broad region of sunspots in the southeast underwent slow development, with moderate magnetic complexity observed. This region is the largest on the disc at present. A relatively complex region to the east of this sunspot group has seen the formation of marginal magnetic complexity in its trailing portion. Further moderately complex spots occupy the south-centre and southwest disc, but evolved only slowly. The remaining regions did not show significant growth or decay during the period.

No Earth-directed Coronal Mass Ejections (CMEs) were observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind varied between slow and slightly elevated speeds, generally between 350-410km/s. The Interplanetary Magnetic Field was predominantly Weak, but briefly increased to Moderate levels from 06/1103 UTC. The important north-south component varied weakly throughout but has remained predominantly northward (+Bz) directed. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is steadily easing following the rise in response to a flare on 01 Sep. It remains well below the S1/Minor Radiation Storm level though.

Four-Day Space Weather Forecast Summary

Solar Activity: Overall, Moderate activity is likely with a chance of isolated Strong flares. The risk of Strong flares decreases slightly by Day 2 (08 Sep) as the region currently just beyond the west limb rotates well away, onto the far side.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs feature in the current forecast. A fast wind from a coronal hole in the northern hemisphere may bring enhancement to the wind profile with slightly elevated wind speeds later on Day 1 and 2 (07 and 08 Sep). Otherwise background wind speeds are expected. MOSWOC Enlil is not considered to be giving good guidance.

Geomagnetic activity is forecast to be largely Quiet, but expected to reach Unsettled to Active levels with a chance of an isolated peak G1/Minor Storm (Kp 5) interval late Day 1 (07 Sep) or early Day 2 (08 Sep) Activity should subside to largely Quiet to Unsettled levels by Day 3 (09 Sep).

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Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is currently fluctuating around normal background levels, but well below the S1/Minor Radiation Storm threshold. There is a slight chance of exceeding S1 levels in the coming days, increasing to a chance on Day 3 (09 Sep).

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	10	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	60	60	60	60
Very Active	R3 to R5 X	No	10	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	15	20	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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